

## (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
29 January 2004 (29.01.2004)

PCT

(10) International Publication Number  
**WO 2004/009793 A3**

(51) International Patent Classification<sup>7</sup>: **C12Q 1/00**,  
1/48, C12P 1/00, 21/06, 19/18, C12N 9/00, 9/10, 9/12,  
A23J 1/00

(21) International Application Number:  
PCT/US2003/023155

(22) International Filing Date: 23 July 2003 (23.07.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/398,156 23 July 2002 (23.07.2002) US  
60/424,894 8 November 2002 (08.11.2002) US

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant (*for all designated States except US*): NEOSE TECHNOLOGIES, INC. [US/US]; 102 Witmer Road, Horsham, PA 19044 (US).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): JOHNSON, Karl, F. [US/US]; 5320 Ivystream Road, Hatboro, PA 19040 (US). BEZILA, Daniel, James [US/US]; 715 Red Lion Road, 2nd Floor, Philadelphia, PA 19115 (US).

(74) Agents: KELLY, Beth, L. et al.; Townsend and Townsend and Crew LLP, Two Embarcadero Center, 8th Floor, San Francisco, CA 94111-3834 (US).

## Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv)) for US only

## Published:

— with international search report

(88) Date of publication of the international search report:  
13 May 2004

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: SYNTHESIS OF GLYCOPROTEINS USING BACTERIAL GLYCOSYLTRANSFERASES

(57) Abstract: This invention provides nucleic acid and amino acid sequences of fucosyltransferases from *Helicobacter pylori*. The invention also provides methods to use the fucosyltransferases to synthesize oligosaccharides, glycoproteins, and glycolipids.

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/23155

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C12Q 1/00, 1/48; C12P 1/00, 21/06, 19/18; C12N 9/00, 9/10, 9/12; A23J 1/00  
US CL : 435/4, 15, 41, 68.1, 97, 183, 193, 194; 530/412

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 435/4, 15, 41, 68.1, 97, 183, 193, 194; 530/412

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
Please See Continuation Sheet

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,399,337 B1 (TAYLOR et al.) 04 June 2002 (04.06.2002), Discloses polypeptide 90-100% identical to SEQ ID NO:2 and 6, see SEQ ID NO:2.	1-8
X,P	US 6,534,298 B2 (TAYLOR et al.) 18 March 2003 (18.03.2003), Discloses polypeptide 90-100% identical to SEQ ID NO:2 and 6, see SEQ ID NO:2.	1-8
X,P	US 2002/0164749 (TAYLOR et al.) 07 November 2002 (07.11.2002), Discloses polypeptide 90-100% identical to SEQ ID NO:2 and 6, see SEQ ID NO:2.	1-8
X,E	US 2003/0166212 (TAYLOR et al.) 04 September 2003 (04.09.2003), Discloses polypeptide 90-100% identical to SEQ ID NO:2 and 6, see SEQ ID NO:2.	1-8
X,E	US 2003/0166211 (TAYLOR et al.) 04 September 2003 (04.09.2003), Discloses polypeptide 90-100% identical to SEQ ID NO:2 and 6, see SEQ ID NO:2.	1-8

<input type="checkbox"/> Further documents are listed in the continuation of Box C.	<input type="checkbox"/> See patent family annex.
<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&amp;" document member of the same patent family</p>

Date of the actual completion of the international search 08 January 2004 (08.01.2004)	Date of mailing of the international search report 19 FEB 2004
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer Manjunath N. Rao, Ph.D. Telephone No. 703-306-0196

**INTERNATIONAL SEARCH REPORT**

PCT/US03/2

**Continuation of B. FIELDS SEARCHED Item 3:**

BIOSIS, CAPLUS, EMBASE, MEDLINE, SCISEARCH, USPTO WEST, BIOTECHNO, BIOTECHABS, CANCERLIT, GENBANK.